REGULAR COURSE SYLLABUS

School of: Professional Studies

Department: Engineering Technology

Prefix & Course Number: EET 2145 Crosslisted With*: ____

Course Title: Electronics

Banner course title (30 characters): Electronics

Check All That Apply: Required for Major: X Required for Minor: X Specified Elective: ____ Required for Concentration: ____ Elective: Service Course: ____

To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

Federal Credit Hour Definition: A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:
(1) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or (2) at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward to the award of credit hours. 34CFR 600.2 (11/1/2010)

Credit Hours: 3 (3+0)

Face-to-Face or Equivalent Hours per course:

Lecture 45 Lab ____ Internship ____ Practicum ____ Other (please specify type and hours): ____

Additional Student Work Hours per course: 90

Schedule Type: L Grade Mode: L

Variable topics umbrella course: No X Yes ____ If Yes, number of credit hours allowed ____

Specified repeatable course: No X Yes

APPROVED:

Département Chair OR Program Director Date 1/29/14

Dean OR Associate Dean Date 1/30/14

Associate VP, Academic and Student Affairs Date

*If crosslisted, attach completed Course Crosslisting Agreement Form
Prefix and Course Number: EET 2145

Prerequisite(s): EET 1150, or EET 2000, and CHE 1100 or CHE 1800 (with a grade of “C” or better for all prerequisites)
Corequisite(s): EET 2165

Banner Enforced:
Prerequisite(s): EET 1150, or EET 2000, and CHE 1100 or CHE 1800 (with a grade of “C” or better for all prerequisites)
Corequisite(s): EET 2165
Prerequisite(s) or Corequisite(s): _____

Registration restrictions: Level ____ Class ____ Program/Major ____ Student attribute ____

Catalog Course Description:
Students in this course will study the theory, modeling and application of semiconductor based electronic circuits. Devices studied include: diodes, bipolar junctions transistors, MOS field effect transistors, thyristors and operational amplifiers. The student will learn to integrate electronic devices in applications such as filtering, amplification, and oscillation.

Specific Variable Topics Course Description (if applicable, umbrella course description included above):

Required Reading and Other Materials will be equivalent to:

Specific, Measurable Student Behavioral Learning Objectives:
Upon completion of this course the student should be able to:
1. Identify and describe the composition of semiconductor materials and devices.
2. Identify and use device parameters using appropriate research resources.
3. Analyze and design semiconductor device based circuits using diodes, bipolar junction transistors (BJT), field effect transistors (FET), voltage regulator, optoelectronic devices and operational amplifiers
4. Demonstrate a basic understanding of analog integrated devices, and power regulation and control circuits.

Detailed Outline of Course Content (Major Topics and Subtopics):
I. Thevenin Conversion (brief review)

II. Semiconductor Theory
   A. Composition
   B. Materials

III. Course Tools
   A. Importance of Manufacturer: Cross Reference, Datasheet, Equivalence, and Specifications
      1. Internet as a Data Book
      2. Manufacturers on the Net
      3. Down-loading Files and Data Sheets
   B. Circuit Simulation Software

IV. Reading Component Data Sheets
   A. Device Parameters

V. Diode:
   A. Device
   B. Applications
   C. Zener
Prefix and Course Number: EET 2145

D. LEDs
E. Other Diodes

VI. Bipolar Junction Transistor:
   A. Theory
   B. Characteristics
   C. Load Lines
   D. Transistor Switch

VII. Transistor Biasing:
   A. Base
   B. Emitter Feedback
   C. Collector Feedback
   D. Voltage Divider

VIII. Transistor Amplifiers
   A. Common Emitter
   B. Common Collector
   C. Common Base

IX. H Parameters (brief)

X. Amplifier Biasing:
   A. Class A
   B. Class B
   C. Class C (brief)

XI. Field Effect Transistors and Biasing
   A. JFET
   B. MOSFET

XII. Small-Signal FET Amplifiers

XIII. Amplifier Frequency Response
   A. General Concepts
   B. Decibel
   C. Frequency Response
   D. Frequency Response Measurements
   E. Filters
      1. Low Pass
      2. High Pass
      3. Band Pass

XIV. Thyristor and Other Devices
   A. Silicon Controlled Rectifier (SCR)
   B. Diac, Triac, Unijunction transistor, Programmable UJT (PUT)
Evaluation of Student Performance:
1. Written exams
2. Homework